Claims

1. A catalyst suitable for use in the hydrogenation of a hydrogenatable organic compound which comprises a palladium compound supported upon an alumina support material characterised in that said catalyst further comprises a compound of a lanthanide.

2. A catalyst as claimed in claim 1 wherein the support is selected from silica, titania, magnesia, alumina, silica-alumina, a calcium-aluminate cement or a mixture of these compounds.

3. A catalyst as claimed in claim 2 wherein the support comprises alumina.

4. A catalyst as claimed in any of claims 1 – 3 wherein the mean pore diameter lies within the range 0.05 – 1 micron.

5. A catalyst as claimed in any of the preceding claims wherein the catalyst is in the form of shaped particles having a minimum dimension greater than 1mm.

6. A catalyst as claimed in any of the preceding claims, wherein the lanthanide compound is a compound of cerium, gadolinium or lanthanum.

7. A catalyst as claimed in claim 6, wherein the lanthanide compound is a compound of cerium

8. A catalyst as claimed in any one of the preceding claims wherein the palladium is present at a level in the range of about 50 ppm to about 1% by weight calculated as Pd metal and the weight of the total catalyst.

9. A catalyst as claimed in any of the preceding claims wherein the lanthanide compound is present at a concentration of 50 – 5000 ppmw based on the lanthanide metal and the weight of the total catalyst.

10. A catalyst as claimed in any of the preceding claims wherein the atomic ratio of Pd to lanthanide metal is in the range 1 :0.5 - 1 : 3.5.

11. A catalyst as claimed in any of the preceding claims wherein the palladium is present in the form of palladium metal.

12. A process for the hydrogenation of a hydrogenatable organic compound comprising the step of passing a mixture of a gaseous feed containing said hydrogenatable organic compound and hydrogen over a catalyst comprising a palladium compound supported upon an alumina support material characterised in that said catalyst further comprises a compound of a lanthanide.

13. A hydrogenation process as claimed in claim 12, wherein said hydrogenatable organic compound comprises an acetylenic compound.

14. A process as claimed in claim 13, wherein said gaseous feed stream contains a minor proportion of an acetylenic compound and a major proportion of an olefinic compound, in addition to hydrogen.

15. A process as claimed in claim 13 or claim 14, wherein said gaseous feed stream contains a minor proportion of acetylene and a major proportion of ethylene, in addition to hydrogen.

16. A process as claimed in any one of claims 12 to 15, wherein said catalyst is a catalyst as claimed in any one of claims 1 – 11.

AMENDED CLAIMS

[Received by the International Bureau on 18 October 2004 (18/10/04): original claims 1 and 12 amended; remaining claims unchanged (2 pages)]

PCT/GB2004/002262 Amended Claims

1. A catalyst suitable for use in the hydrogenation of a hydrogenatable organic compound which consists essentially of a palladium compound supported upon a support material characterised in that said catalyst further comprises a compound of a lanthanide.

2. A catalyst as claimed in claim 1 wherein the support is selected from silica, titania, magnesia, alumina, silica-alumina, a calcium-aluminate cement or a mixture of these compounds.

3. A catalyst as claimed in claim 2 wherein the support comprises alumina.

4. A catalyst as claimed in any of claims 1 – 3 wherein the mean pore diameter lies within the range 0.05 – 1 micron.

5. A catalyst as claimed in any of the preceding claims wherein the catalyst is in the form of shaped particles having a minimum dimension greater than 1mm.

6. A catalyst as claimed in any of the preceding claims, wherein the lanthanide compound is a compound of cerium, gadolinium or lanthanum.

7. A catalyst as claimed in claim 6, wherein the lanthanide compound is a compound of cerium

8. A catalyst as claimed in any one of the preceding claims wherein the palladium is present at a level in the range of about 50 ppm to about 1% by weight calculated as Pd metal and the weight of the total catalyst.

9. A catalyst as claimed in any of the preceding claims wherein the lanthanide compound is present at a concentration of 50 – 5000 ppmw based on the lanthanide metal and the weight of the total catalyst.

10. A catalyst as claimed in any of the preceding claims wherein the atomic ratio of Pd to lanthanide metal is in the range 1 :0.5 - 1 : 3.5.

11. A catalyst as claimed in any of the preceding claims wherein the palladium is present in the form of palladium metal.

12. A process for the hydrogenation of a hydrogenatable organic compound comprising the step of passing a mixture of a gaseous feed containing said hydrogenatable organic

compound and hydrogen over a catalyst which consists essentially of a palladium compound supported upon a support material characterised in that said catalyst further comprises a compound of a lanthanide.

13. A hydrogenation process as claimed in claim 12, wherein said hydrogenatable organic compound comprises an acetylenic compound.

14. A process as claimed in claim 13, wherein said gaseous feed stream contains a minor proportion of an acetylenic compound and a major proportion of an olefinic compound, in addition to hydrogen.

15. A process as claimed in claim 13 or claim 14, wherein said gaseous feed stream contains a minor proportion of acetylene and a major proportion of ethylene, in addition to hydrogen.

16. A process as claimed in any one of claims 12 to 15, wherein said catalyst is a catalyst as claimed in any one of claims 1 – 11.